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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,039	02/04/2004	Evanthia Papadopoulou	BUR920030149US1	2038

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EXAMINER

PARIHAR, SUCHIN

ART UNIT	PAPER NUMBER
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2825

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/708,039		PAPADOPOULOU ET AL.	
	Examiner		Art Unit	
	Suchin Parihar		2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/4/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-15,17-24 and 26-31 is/are rejected.
- 7) ☒ Claim(s) 6, 16 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/4/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to application 10/708,039, filed 2/4/2004. Claims 1-31 are pending in this application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claim 3 is rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With respect to claim 3, the meaning of "L infinity" is unclear and must be defined in the claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-2, 4-5, 7-15, 17-24 and 26-31 are rejected under 35 U.S.C. 102(e)** as being anticipated by Ikeda (US PG Pub 2004/0096092).
5. With respect to claims 1, 12 and 21, Ikeda teaches:

partitioning (dividing image into Voronoi regions so that each region includes single pattern edge) an edge of a shape (see Figure 11, IC shape edge is divided into

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sections [i.e. intervals]) in the IC design into a plurality of intervals (lattice sections, see Description of Figures 9-12, paragraphs [0119]-[0122]); and

assigning at least one dimension to each interval (length [i.e. dimension] is imparted to each edge of the lattice [i.e. interval], paragraph [0170]).

6. With respect to claim 30, Ikeda teaches:

means for partitioning (dividing image into Voronoi regions so that each region includes single pattern edge) an edge of a shape (see Figure 11, IC shape edge is divided into sections [i.e. intervals]) in the IC design into a plurality of intervals (lattice sections, see Description of Figures 9-12, paragraphs [0119]-[0122]), the partitioning means including:

means for generating a core Voronoi diagram for the shape using a first metric (preparing a voronoi diagram with respect to the extracted partial point sequence, paragraph [0055]);

means for partitioning the edge based on the core Voronoi diagram (Voronoi diagram prepared with respect to vertices [i.e. endpoints of each edge interval], paragraph [0121]; also see Voronoi diagram being generated in Figure 11);

means for assigning at least one dimension to each interval (length [i.e. dimension] is imparted to each edge of the lattice [i.e. interval], paragraph [0170]) using a second metric (length metric L_{ij} , see paragraph [0170]); and

means for using the at least one dimension (comparing Voronoi diagrams, which suggests the use of comparing respective lengths, widths or radii, see paragraph

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[0249]) to evaluate a check rule (checking the edges and vertices that do not match each other, paragraph [0249]).

7. With respect to claims 2, 13 and 22, Ikeda teaches all the elements of claims 1, 12 and 21, from which the claims depend respectively. Ikeda teaches: generating a core Voronoi diagram for the shape (preparing a voronoi diagram, paragraph [0055]); and partitioning the edge based on the core Voronoi diagram (Voronoi diagram prepared with respect to vertices [i.e. endpoints of each edge interval], paragraph [0121]; also see Voronoi diagram being generated in Figure 11).

8. With respect to claims 4, 14 and 23, Ikeda teaches all the elements of claim 2, 13 and 22, from which the claims depend respectively. Ikeda teaches: wherein the partitioning step further includes partitioning the edge based on a core element for each vertex of the core Voronoi diagram (as seen in Fig 11, pattern elements have edges divided by the vertices shown in the Voronoi diagram figure).

9. With respect to claims 5, 15 and 24, Ikeda teaches all the elements of claims 4, 14 and 23, from which the claims depend respectively. Ikeda teaches: wherein the core element is one of a largest possible core element (unit cell [i.e. core element] has a larger size, paragraph [0023]) and a smallest possible core element.

10. With respect to claims 7, 17 and 26, Ikeda teaches all the elements of claims 1, 12 and 22, from which the claims depend respectively. Ikeda teaches: wherein the at least one dimension includes a width for each interval (weight function for each edge of the lattice, paragraph [0170]) and a spacing to a neighboring shape for each interval (a

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length [i.e. spacing to next shape] for each edge of the lattice [i.e. interval], paragraph [0170]).

11. With respect to claims 8, 18 and 27, Ikeda teaches all the elements of claims 1, 12 and 22, from which the claims depend respectively. Ikeda teaches: wherein the dimension is a function of another dimension (L_{ij} , a length dimension which is a function of two dimensions i and j , see paragraph [0170]).

12. With respect to claims 9, 19 and 28, Ikeda teaches all the elements of claims 1, 12 and 22, from which the claims depend respectively. Ikeda teaches: using the at least one dimension (comparing Voronoi diagrams, which suggests the use of comparing respective lengths, widths or radii, see paragraph [0249]) to evaluate a check rule (checking the edges and vertices that do not match each other, paragraph [0249]).

13. With respect to claims 10, 20 and 29, Ikeda teaches all the elements of claims 9, 19 and 28, from which the claims depend respectively. Ikeda teaches: wherein the check rule involves at least one of: a single edge (see Figure 33, S86, wherein each Voronoi region includes a single pattern edge), a pair of neighboring edges, and edges within more than one layer of the IC design.

14. With respect to claim 11, Ikeda teaches all the elements of claim 1, from which the claim depends. Ikeda teaches: wherein each concave vertex of the shape is an interval (Figure 17 shows images of pattern with convex/concave contours, see Figure 17).

15. With respect to claim 31, Ikeda teaches all the elements of claim 30, from which the claim depends. Ikeda teaches: wherein the check rule is a width dependent spacing

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rule (see Figure 16, wherein searching/checking the spacing between the kernels CN2 and CN4 to the edge of a shape).

Allowable Subject Matter

16. Claims 6, 16 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter: With respect to claims 6, 16 and 25, the prior art of record fails to teach:

wherein in the case that the core element is the largest possible core element, the intervals are as large as possible, and

wherein in the case that the core element is the smallest possible core element, the intervals are as small as possible.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suchin Parihar whose telephone number is 571-272-6210. The examiner can normally be reached on Mon-Fri, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on 571-272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

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information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PAUL DINH
PRIMARY EXAMINER



Suchin Parihar
Examiner
AU 2825